A new technique to decipher thermobaric structures of metamorphic regions

Takeshi Ikeda[1]

[1] Earth and Planetary Sci., Kyushu Univ

A new technique is presented that estimates relative differences in pressure and temperature among rocks of which temperature and pressure have not been determined by conventional geothermobarometers. This technique adopts a fundamental equation that represents variation in equilibrium constant of a reaction as a function of difference in pressure and temperature for two reactions defined in mutual minerals. Choosing one of the rocks as a reference that contains not only minerals mutual to other rocks but also specific minerals such that a pair of conventional geothermobarometers enable to determine its conditions, provides the conditions of other rocks as differences from the reference value. This method has an advantage that any reactions can be employed as long as only entropy and volume of phase components are known, which are obtained from the internally consistent thermodynamic data.